REMARKS/ARGUMENTS

Claims 15-25 were previously pending in the application. Claims 21-25 are canceled; and new claims 26-30 are added herein. Assuming the entry of this amendment, claims 15-20 and 26-30 are now pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

In paragraph 2 of the final office action, the Examiner rejected claims 15-16 and 18 under 35 U.S.C. 102(e) as being anticipated by Ella. In paragraph 7, the Examiner rejected claim 17 under 35 U.S.C. 103(a) as being unpatentable over Ella in view of Ketcham. In paragraph 9, the Examiner rejected claims 19 and 21-24 under 35 U.S.C. 103(a) as being unpatentable over Ella in view of Chason. In paragraph 15, the Examiner rejected claims 20 and 25 under 35 U.S.C. 103(a) as being unpatentable over Ella in view of Chason in view of Fischer. For the following reasons, the Applicant submits that all of the now-pending claims are allowable over the cited references.

Claim 15

According to previously presented claim 15, the piezoelectric layer spans the cavity in the substrate to form a suspended membrane portion of the piezoelectric layer. The Applicant submits that Ella does not teach a piezoelectronic device having such a feature.

According to the Examiner, Figs. 2 and 4 of Ella show piezoelectric devices having a piezoelectric layer that "spans a cavity to from [sic] a suspended membrane portion of the piezoelectric layer." See paragraph 3 of the office action. The Applicant respectfully submits that the Examiner mischaracterized the teachings in Ella in rejecting claim 15.

According to the Merriam-Webster Online Dictionary (i.e., http://www.m-w.com/dictionary/suspended), "suspend" means "to hang so as to be free on all sides except at the point of support." Fig. 5B of the present application shows an example of a piezoelectric layer that spans a cavity to form a suspended membrane portion of the piezoelectric layer. In particular, piezoelectric layer **222** is supported by substrate **220** on opposite sides of the cavity formed within substrate **220**, while the middle portion of piezoelectric layer **222** is not supported by substrate **220** or any other structure. In that sense, piezoelectric layer **222** spans the cavity in substrate **220** to form a suspended membrane portion corresponding to that middle portion of the piezoelectric layer.

As described in column 1, lines 48-57, Ella's Fig. 2 shows a bulk acoustic wave resonator having a bridge structure, where membrane **130** is deposited on substrate **200**. The resonator further comprises a bottom electrode **110** on the membrane, a piezoelectric layer **100**, and a top electrode **120**, where a gap **210** is created between the membrane and the substrate. Thus, in Fig. 2, membrane **130** spans a cavity (i.e., the gap) to form a suspended membrane portion, but membrane **130** is not a piezoelectric layer. As such, membrane **130** is not an example of the piezoelectric layer of claim 15.

While it is true that layer **100** is a piezoelectric layer, piezoelectric layer **100** does not span a cavity to form a suspended membrane portion. Rather, piezoelectric layer **100** is fully supported by other structure (i.e., in part by membrane **130** and the rest by bottom electrode **110**. As such, there is no portion of piezoelectric layer **100** that constitutes a suspended membrane portion spanning a cavity. Piezoelectric layer **100** therefore is also not an example of the piezoelectric layer of claim 15.

Similarly, as described in column 2, line 61, to column 3, line 3, Ella's Fig. 4 shows almost an identical structure, except that the gap in Fig. 2 is, in Fig. 4, a via-hole **211** etched through the whole substrate. In any case, the fact remains that, as in Fig. 2, in Fig . 4, non-piezoelectric membrane layer **130**

spans a cavity (i.e., in this case, via-hole **211**) to form a suspended membrane portion, while piezoelectric layer **100** does not.

For all these reasons, the Applicant submits that claim 15 is allowable over Ella. Since the rest of the claims depend variously from claim 15, it is further submitted that those claims are also allowable over Ella.

New Claims 26-30

Support for new claims 26-30 is found in Fig. 5B and paragraph [0042] in the specification. Each of claims 26-30 recites structural features that further distinguish the claimed invention over the teachings in the cited references.

In particular, according to claims 26 and 30, the piezoelectric layer is in direct contact with the substrate on opposing sides of the cavity. In Figs. 2 and 4 of Ella, piezoelectric layer **100** is not in direct contact with substrate **200** at all, let alone in direct contact on opposing sides of the cavity. In Fig. 2C.2 of Ketcham, piezoelectric layer **30** is in direct contact with substrate **32** on only one side of the cavity. See column 4, line 25, to column 5, line 26.

According to claims 27 and 30, all support for the piezoelectric layer is provided directly by the substrate without any intervening structure. In Figs. 2 and 4 of Ella, support for piezoelectric layer **100** is provided directly by membrane **130** and bottom electrode **110** and not directly by substrate **200** at all. In Fig. 2C.2 of Ketcham, some support for piezoelectric layer **30** is provided directly by substrate **32**, but not all support, because other support for piezoelectric layer **30** is provided by electrode **M2**.

According to claims 28 and 30, the at least one conducting element mounted on the inner side extends within the cavity beyond the surface of the inner side. In Figs. 2 and 4 of Ella, bottom electrode **110** does not extend within the cavity at all. In Fig. 2C.2 of Ketcham, electrode **M2** does not extend within the cavity beyond surface **44** of piezoelectric layer **30**.

According to claim 29, the at least one conducting element mounted on the inner side is not in direct contact with the substrate. In Fig. 2C.2 of Ketcham, electrode **M2** is in direct contact with substrate **32**.

Neither Chason, Fischer, nor Kaitila provide the features missing from Ella and Ketcham.

Each of these claims provides additional reasons for the allowability of the claimed invention over at least some if not all of the cited prior art references.

In view of the foregoing, the Applicant respectfully submits that the rejections of claims under Sections 102(e) and 103(a) have been overcome.

In view of the above amendments and remarks, the Applicant believes that the now-pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,

Date: 09/14/2006
Customer No. 46900
Mendelsohn & Associates, P.C.
1500 John F. Kennedy Blvd., Suite 405
Philadelphia, Pennsylvania 19102

/Steve Mendelsohn/
Steve Mendelsohn
Registration No. 35,951
Attorney for Applicant
(215) 557-6657 (phone)
(215) 557-8477 (fax)